

Amendments to the Specification:

Please replace the following paragraphs in the specification for those originally filed. Amendments are shown with additions underlined and deletions in strikethrough text or double brackets, where appropriate.

*Please amend the paragraph before the heading **BACKGROUND OF THE INVENTION** as follows:*

~~BY INVENTORS~~

~~Louis B. Rosenberg~~

~~Bruce M. Schena~~

~~Scott B. Brave~~

~~Bernard G. Jackson~~

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a Continuation of U.S. Patent Application 09/687,923, filed October 13, 2000, now U.S. Patent No. 6,697,748; which is a Continuation of U.S. Patent Application 08/739,454, filed October 29, 1996, now U.S. Patent No. 6,134,506; which is a Divisional of U.S. Patent Application 08/512,084, filed August 7, 1995, now U.S. Patent No. 5,724,264.

Please replace the paragraph beginning at page 17, line 3 with the following paragraph:

Other types of interface circuitry can also be used. For example, an electronic interface is described in U.S. Patent Application Serial No. 08/092,974, filed July 16, 1993 and entitled "3-D Mechanical Mouse," now abandoned, assigned to the assignee of the present invention and incorporated herein by reference in its entirety. The electronic interface described therein was designed for the Immersion PROBE™ 3-D mechanical mouse and has six channels corresponding to the six degrees of freedom of the Immersion PROBE.

Please replace the paragraph beginning at page 22, line 27 with the following paragraph:

In step 148, one or more spatial coordinates of the stylus tip 43 are determined for each sampled orientation of the stylus. The angle values at each orientation that were read in step 146 are used with well known kinematic equations to derive x, y, and z position coordinate values for each sampled orientation (as is normally accomplished when the position and orientation of stylus 22 are determined during digitizing operation). The previous (or nominal) calibration parameters are used in these kinematic equations. In next step 150, error values between the x, y, and z coordinates of the sampled orientations are determined and stored, preferably in the memory device of the probe apparatus. If the probe apparatus were perfectly calibrated, there would be no difference between the x, y, and z coordinates of the different sampled orientations, since the stylus tip was fixed at one position. However, small variations in the probe apparatus cause errors to be introduced when the joints are rotated, as when the orientation of the stylus is varied. Thus, the kinematic equations will typically produce x, y, and z coordinates that are slightly different for each sampled variation. The differences between these derived coordinates are stored. For example, if three sampled orientations are read, the x coordinates are compared between each of the sampled orientations. The difference between the first and second sampled orientations are stored as one error value, the difference between the first and third orientations are stored as a different error value, etc.

Please replace the paragraph beginning at page 27, line 10 with the following paragraph:

Figure 10 is an illustration of mesh representation 78 (also referred to as a “mesh”) that is developed by host computer 18 using the method of the present invention after a user has traced

surface lines 192 of object 20 shown in Figure 9. Mesh representation 78 includes contour lines 194 which are computer-generated lines that generally follow corresponding surface lines 192 on object 20 which the user traced. Contour lines 194 each include a number of points 196 which were provided as angle values or coordinates to host computer 18 from probe apparatus 12. Each point 196 describes a corresponding surface point on surface 190 of object 20. Herein, “point” or “data point” refers to the data, such as angle values or coordinates, that describe the current position and orientation of the stylus ~~[[44]]~~ 22, while “surface point” refers to the corresponding portion on the surface of the object which is pointed to by the stylus ~~[[44]]~~ 22. Each point, after being converted from angle data to coordinate data, includes x, y, and z position data as well as roll, pitch and yaw orientation data.

Please replace the paragraph beginning at page 36, line 1 with the following paragraph:

Thus, first member 322 is allowed almost 720 degrees of rotation (i.e., two full rotations) in the direction opposite to arrow 334 from the position shown in Figure 21a until second stop is impacted. The multistage stop joint 320 thus allows a greater range of motion to stylus 22 and any other linkages that are coupled to similar joints. The stylus ~~[[44]]~~22 is still limited in its movement by stops, however, which is important in that a wire bundle that is routed through joint 320 does not become overly stressed or twisted (which would occur if joint 320 had no stops at all).

Please delete the last paragraph beginning at page 36, line 23 as follows:

~~*What is claimed is:*~~